SPRING CREEK ECONOMIC ANALYSIS (Quick-Silver)

An economic analysis of the proposed actions was conducted using Quick-Silver (Version 5.004.45). The alternatives were analyzed based on preliminary identification of three alternatives: No Action, Proposed Action, and Proposed Action (no herbicide). Analysis covers all stands proposed for management. The standard Forest Service discount rate of 4% and an inflation rate of 0% were used in the calculations.

Alternatives Analyzed

The No Action alternative analyzed the economic impact if none of the proposed management actions is implemented. This alternative does not take into effect custodial management actions and daily public activities conducted in the area (routine road maintenance, dispersed recreation activities, gas and oil operations, etc.).

The Proposed Action alternative analyzed the proposed actions, and included preparatory activities such as sale layout and design, timber sale administration and required monitoring for the endangered Indiana bat, per the revised Biological Opinion issued to the Daniel Boone National Forest in 2007.

The Proposed Action (no herbicide) includes all proposed actions and preparatory activities as described above, with mechanical site preparation analyzed in lieu of chemical site preparation.

Basic Assumptions

Unit rates for the costs ascribed to the various alternatives have been derived from a number of sources.

- ✓ Rates for site preparation have been based on recently awarded contracts across the forest
- ✓ Rates for building wildlife ponds based on actual costs for building ponds for a previous fiscal year project
- ✓ Sawtimber and Pulpwood stumpage rates were based on the September, 2010 Hardwood Weekly Review Stumpage rates
    - o Stumpage rate have factored in costs for road maintenance (routine and pre-haul)
- ✓ Indiana bat monitoring costs for the four proposed harvest units would take place prior to and upon completion of the harvest (occur in two separate years)
- ✓ Heritage resource technician (HRT) surveys were planned for all three alternatives since it was conducted prior to issuance of a decision on the proposal
    - o Costs to complete the NEPA process were not included. It is extremely difficult to quantify either the time or finances involved in the NEPA process. Furthermore, the cost of those personnel is incurred by the Forest Service whether this proposal (or any others) moves forward.
- ✓ Sale preparation costs also include costs of sale administration during harvest activities
- ✓ Costs and benefits were modeled using the Forest Service as the sole investor

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Alternative 1 - No Action alternative

No economic benefit is derived from this alternative, as proposed activities would not be implemented. In this case, Alternative 1 leaves the Forest Service at a relatively small deficit. From an economic standpoint, this is a less costly alternative to select. Ultimately, selecting the No Action alternative is rarely a financial choice, but rather one selected based on a real or perceived cost to intrinsic values un-quantifiable for this type of exercise (e.g. a "Likely to Adversely Affect" finding, divergence of a proposal from laws governing Forest Service activities).

Alternatives 2 & 3 - Action alternatives

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The difference between the two action alternatives is negligible (from a financial perspective). Alternative 3 does not include chemical site preparation, but does include mechanical site preparation that would be required to achieve the desired future condition in lieu of herbicide application. Mechanical site preparation is typically more costly due to a greater time investment to complete. If a decision were to be selected on a financial basis alone, Alternative 2 would require a slightly smaller investment from the Forest Service.

Results

The economic analysis shows that the two action alternatives are in fact financially profitable alternatives. Using the standard Forest Service discount rate of 4% allows us to assess the net benefit beyond the return from other proposals of equal risk (say, Alternatives 2 & 3). Based on the present net value, Alternative 2 would be the preferred alternative, with a slightly higher value associated. With a resulting benefit/cost ration of 1.51 and 1.48 for Alternatives 2 & 3, the Forest Service would ultimately recoup half again the costs of project planning and implementation, unless costs rose more than 48% prior to completion. The internal rate of return can be used to describe the desirability of completing such a project in terms of efficiency; Alternative 2 would then be more preferable given the higher IRR. However, IRR may not be a good indicator when comparatively examining mutually exclusive projects. Results are expressed in Table 1 below.

Table 1 – Quicksilver Analysis for Spring Creek

Economic Indicator	Alternative 1 No Action	Alternative 2 Proposed Action	Alternative 3 Proposed Action (no herbicide)
Benefit/Cost Ratio	0.00	1.51	1.48
Composite Rate of Return	N/A	15.19%	14.71%
Internal Rate of Return	N/A	40.14%	39.13%
Present Net Value	-$3,000.00	$44,241.62	$42,762.33
Present Value - Benefits	$0.00	$131,827.11	$131,827.11
Present Value - Costs	-$3,000.00	-$87,585.48	-$89,064.77

Additional analyses were completed (not included) to model the economics of the project in a vacuum; one run was completed excluding the surveys required by other applicable laws as well as excluding the crop tree release work; another run was completed that ascribed the costs associated with wildlife surveys and pond construction to the Kentucky Division of Fish & Wildlife Resources (with whom we have a jointly-funded position). The exclusionary run resulted in an increase in the benefit/cost ratio of Alternatives 2 & 3, rising to 2.0 and 1.98 respectively; the composite rate of return doubled, and the internal rate of return rose approximately 20% over that of the official proposal. The cooperative run resulted in negligible increases to benefit/cost ratio and present net value over the official proposal.

It should be noted that figures used to assess stumpage benefits are local, and based in a recessed economy. Some local timber mills have refrained from accepting timber, which has further depressed the local economy. Some Forest Service timber sales offered for bid in the last 12-24 months (across the Forest) have closed with no bids. The Spring Creek project is not planned for implementation for at least two more fiscal years due to the heavy backlog of prepared sales ready for public offering. Stumpage values assessed for this proposal are greatly reduced from values a few years prior. While we do not expect that a market rally would create a more lucrative benefit/cost ratio, it is likely that a rally

would increase stumpage prices, and consequently increase the composite rate of return of Alternatives 2 & 3, as well as to reduce the overall PV-Costs.

Conclusion

Based on economics alone, the Alternative 2 Proposed Action would be the most fiscally responsible decision, with lower costs, and slightly higher value and return than the other action alternative.

The Multiple-Use Sustained Yield Act of 1960 states that National Forests are to be administered for outdoor recreation, range, timber, watershed, wildlife and fish purposes. Furthermore, the Act authorizes the development and administration of the renewable surface resources of the National Forests for multiple use and sustained yield of the products and services offered by NFS lands. National Forest lands provide a variety of benefits to the public, and there is a cost associated with these benefits. The Forest Service strives to balance benefits and costs when proposing management activities in order to provide the best combination of ecosystem resources to meet various demands, whether they are monetary or intrinsic (such as ecosystem diversity, water quality, aesthetics, or wildlife habitat).

The total economic value of a forest includes:

- ✓ Market use values - timber, human forage, some recreation activities
- ✓ Nonmarket use values – clean water, clean air, scenic vistas, some recreation activities
- ✓ Option value – the potential for future use e.g. deferred harvest
- ✓ Existence values – just knowing the forest is there
- ✓ Intrinsic values – value outside of human awareness e.g. preferred habitat for non-game species

Some of these values, particularly the existence and intrinsic values, are not quantifiable, but provide benefits nonetheless. The stated purpose and need for this project is to diversify wildlife habitat, improve forest health by reducing competition, and provide forest products for public use. While forest products are quantifiable, the remaining items are not. Therefore, additional benefits (with no financial information attached) were incorporated in the analysis, including forest health (reduced susceptibility to forests pests and disease), wildlife habitat (increased habitat diversity following the implementation of the shelterwood treatments and upland water sources), and recreation (increased opportunities for hunting and wildlife viewing). Considering these benefits would increase the return on implementing an action alternative, making it a more desirable option than the no action alternative.

Factoring in these non-monetary values can be subjective. While Alternative 2 shows a higher rate of return, some might argue that the small financial benefit of this alternative over the no herbicide alternative does not outweigh the perceived (non-financial) cost of applying pesticides. Again, this is not necessarily a quantifiable cost, and therefore difficult to incorporate into the analysis.

Selecting an action alternative would provide forest products to the public, as well as to provide job opportunities to local residents and the natural resource/timber industry. Selecting an action alternative would also work towards meeting the desired future conditions, as described in the Forest Plan. Furthermore, selecting an action alternative would help to make the stands proposed for treatment less susceptible to insect infestation and disease, and ultimately provide a healthy renewable resource to perpetuate timber sale receipts. And finally, selecting an action alternative would provide the additional existence and intrinsic values of diversifying wildlife habitat and increasing recreational opportunities.